Small Business Innovation Research/Small Business Tech Transfer

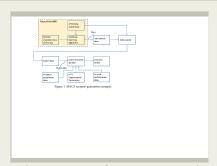
Selecting Days for Concept and Technology Evaluation in SMART-NAS Test-Bed Scenario Generation, Phase I



Completed Technology Project (2017 - 2017)

Project Introduction

Crown Consulting, Inc. will investigate and demonstrate methods to enable rapid selection of days for scenario generation in the development and evaluation of Air Traffic Management concepts and technologies (C&T) in the Shadow Mode Assessment using Realistic Technologies for the National Airspace System (SMART-NAS) Test-bed (SNTB). The proposed capability will enable the rapid generation of highly operationally relevant scenarios for use in the development and evaluation of technology demonstrators such as NASA Airspace Technology Demonstrator, ATD-2 and ATD-3, Unmanned Aerial System Traffic Management, as well as new operational concepts such as Integrated Demand Management and Trajectory Based Operations. A significant motivation for the development of the SNTB is enabling C&T benefit, impact, safety and cost assessments for speeding up deployment in the NAS. Today, C&T introduction into the NAS takes decades. The primary reason for this is an inability to assess the operational impact of the interaction between the proposed C&T and operationally deployed systems in terms of NAS-wide safety, traffic flow efficiency, roles and workload of controllers and traffic managers, and impact on airline operations. Human-In-The-Loop testing and shadow-mode evaluation driven by operational data. Slow and incremental steps are typically taken towards deployment because of limitations in the development of mathematical modeling and simulation. The proposed innovation seeks to augment the scenario generation capability of NASA's SNTB with methods and tools for selecting traffic, winds and weather based on the needs of the experiment allowing for highly operationally relevant scenarios. These methods and tools would actively categorize incoming and historical data using advanced machine-learning algorithms, allowing fast access to NAS streaming and legacy data in a big-data warehouse through queries generated via a simple user interface for specifying desired characteristics.



Selecting Days for Concept and Technology Evaluation in SMART-NAS Test-Bed Scenario Generation, Phase I Briefing Chart Image

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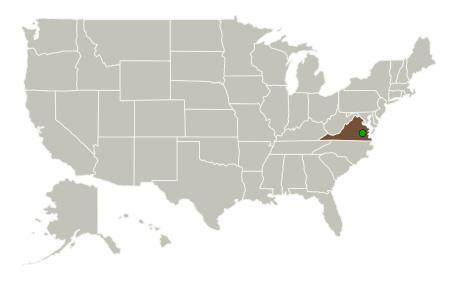


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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Туре	Location
Crown Consulting, Inc.	Lead Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB)	Arlington, Virginia
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations

Virginia

Project Transitions



Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Crown Consulting, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

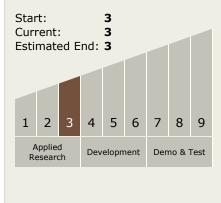
Program Manager:

Carlos Torrez

Principal Investigator:

Thomas J Davis

Technology Maturity (TRL)





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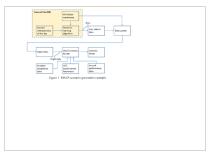


December 2017: Closed out

Closeout Documentation:

• Final Summary Chart(https://techport.nasa.gov/file/140752)

Images



Briefing Chart Image

Selecting Days for Concept and Technology Evaluation in SMART-NAS Test-Bed Scenario Generation, Phase I Briefing Chart Image (https://techport.nasa.gov/image/137186)

Technology Areas

Primary:

 TX16 Air Traffic Management and Range Tracking Systems
 TX16.3 Traffic Management Concepts

